

Claims

1. A method for dynamic backhaul resource management in a wireless communication system comprising:
 - 5 determining, by a packet control unit (PCU), a link capacity of a backhaul link for conveying data to be transmitted during a transmit period;
 - determining, by the PCU, a data traffic level which is an amount of data that will need to be conveyed by the backhaul link for transmission during the transmit period, assuming that wireless unit coding schemes are maximized
 - 10 according to present wireless channel conditions;
 - when the data traffic level is greater than the link capacity, reducing a coding scheme of at least one wireless unit for the transmit period in order to reduce the data traffic level to fit within the data capacity of the backhaul link.
- 15 2. The method of claim 1, wherein the transmit period comprises a period in which a plurality of air interface timeslots are concurrently transmitted.
3. The method of claim 1, wherein the backhaul link comprises a PCU-BTS bearer link between the PCU and a base transceiver station (BTS).
- 20 4. The method of claim 3, wherein the PCU-BTS bearer link comprises 20 millisecond backhaul frames.
5. The method of claim 1, wherein reducing the coding scheme of at least
- 25 one wireless unit for the transmit period comprises not conveying data to the at least one wireless unit during the transmit period.
6. The method of claim 1, wherein reducing the coding scheme of at least
- 30 one wireless unit for the transmit period comprises reducing the data rate at which data will be transmitted to the at least one wireless unit during the transmit period.

7. The method of claim 1, further comprising conveying data targeted for an air interface timeslot for the transmit period via multiple backhaul link timeslots.
- 5 8. The method of claim 7, wherein each backhaul link timeslot of the multiple backhaul link timeslots is also used to convey data targeted for at least one other air interface timeslot.
9. The method of claim 7, wherein conveying data targeted for an air
10 interface timeslot via multiple backhaul link timeslots is performed when an available number of backhaul link timeslots is less than a number of targeted air interface timeslots.
10. The method of claim 1, wherein the at least one wireless unit has a
15 lowest QoS priority as compared to other wireless units targeted with data during the transmit period.

11. A packet control unit (PCU) dynamic backhaul resource management in a wireless communication system, the PCU comprising:
- a PCU network interface adapted to send and receive messaging using a plurality of communication protocols;
 - 5 a controller, communicatively coupled to the PCU network interface, adapted to determine a link capacity of a backhaul link for conveying data to be transmitted during a transmit period, adapted to determine a data traffic level which is an amount of data that will need to be conveyed by the backhaul link
 - 10 via the PCU network interface for transmission during the transmit period, assuming that wireless unit coding schemes are maximized according to present wireless channel conditions, and
 - adapted to reduce a coding scheme of at least one wireless unit
 - 15 for the transmit period, when the data traffic level is greater than the link capacity, in order to reduce the data traffic level to fit within the data capacity of the backhaul link.
- 20 12. The method of claim 11, wherein the transmit period comprises a period in which a plurality of air interface timeslots are concurrently transmitted.
13. The method of claim 11, wherein the backhaul link comprises a PCU-
- 25 BTS bearer link between the PCU and a base transceiver station (BTS).
14. The method of claim 13, wherein the PCU-BTS bearer link comprises 20 millisecond backhaul frames.
- 30 15. The method of claim 11, wherein the controller is further adapted to convey, via the PCU network interface, data targeted for an air interface timeslot for the transmit period via multiple backhaul link timeslots.

16. The method of claim 15, wherein each backhaul link timeslot of the multiple backhaul link timeslots is also used to convey data targeted for at least one other air interface timeslot.
- 5 17. The method of claim 15, wherein the controller conveys data targeted for an air interface timeslot via multiple backhaul link timeslots when an available number of backhaul link timeslots is less than a number of targeted air interface timeslots.
- 10 18. The method of claim 11, wherein the at least one wireless unit has a lowest QoS priority as compared to other wireless units targeted with data during the transmit period.